

DZHAGATSPANYAN, A.K., otv.red.; ALLAKHVERDYAN, G.O., otv.red.;  
SLKUNI, A.G., red.isd-va; KAPLANYAN, M.A., tekhn.red.

[Specialization and cooperation in the machinery industry]  
Spetsializatsiia i kooperirovanie v mashinostroenii. Erevan,  
1959. 144 p. (MIRA 12:8)

1. Akademiya nauk Armyanskoy SSR, Yerevan. Institut ekonomiki.  
(Machinery industry)

DZHAETSPANYAN, R. V.

V1391. Mass-spectrometric method of analysis of chlorine derivatives of methane. S. B. Kuprivanov, R. V. Dzhagetspanyan, M. V. Tikhomirov, and N. H. Tunitskiy (L. Ya. Karpov Physico-Chem. Scientific Research Inst). Zaved. Lab., 1955, 21, No. 10, p. 1182-1188.

Methods for the analysis of mixtures of methane, chloroethane, dichloroethane, chloroform and carbon tetrachloride are described.

G. S. Smith

DZHAGATSPANYAN, R.V.; TUNITSKIY, N.N.

~~CONFIDENTIAL~~

Experimental study of the dilution of chromatographic bands.  
Dokl.AN SSSR 105 no.6:1282-1284 D '55. (MIRA 9:4)

1.Fiziko-khimicheskiy institut imeni L.Ya.Karpeva. Predstav-  
lene akademikom V.A.Karginym.  
(Chromatographic analysis)

DZUAGAPSPANYAN, RSV

Map and sketch of the area of the  
DZUAGAPSPANYAN, RSV. The map shows the  
location of the area in the region of the  
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DZHAGATSPANYAN, R. V.

PHASE I BOOK EXPLOITATION 507/2386

POSSON, Tzitziko-Khalachoskiy Institut

Problemy fizicheskoy khimii, t. 1, vyp. 2 (Problems in Physical Chemistry: Transactions of the Institute, no. 2), Moscow, Goskhimizdat, 1959. 202 p., 1,000 copies printed.

**Editorial Board:** Ya. M. Vainshteyn, Doctor of Chemical Sciences; O. S. Zhurav, Doctor of Chemical Sciences; V. A. Kargin, Akademiad; Ya. M. Kolesnikov, Doctor of Chemical Sciences (Responsible); V. S. Medvedev, Akademiad; S. Ya. Panchenko, Doctor of Chemical Sciences; V. M. Cherenchenko, Candidate of Chemical Sciences; V. I. Chuvpilo (Editorial Secretary); A. M. Kulakov, Doctor of Chemical Sciences; Ed.: I. A. Vashkov, Tech. Ed.: G. O. Shupik.

PUMPGSE: This collection of articles is intended for physical chemists.

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reskin, M. I., N. M. Morozov, V. M. Rynev (Deceased), M. O. Apol'chuk, L. I. Luk'yanova, and Y. A. Semidkin. The Oxidation of Ammonia Over a Nonplatinum Catalyst. 14

2. Ito, S. I., Kametaka, T., Ohta, A., Kato, N., Kuroda, N., Koyama, A., Maeda, Y., Mizutani, N., Saitoh, Y., and Y. Ohmura, *Kinetics of Decomposition, and the Explosion of Gels*. Kinuchi, Jun (Japan). How to Find the Kinetic Equation of a Reversible Reaction. 39

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ful Source of Y Radiation

Polinger, V. K., B. G. Vasil'nev and N. M. Guntaksky. Study of the Interaction of "Dislocation of n-Octane and n-Nonane Radicalized" by the Method of Bombardment with "Quasi-Resonant" Electrons

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KRYZHOV, M. R., A. V. ZIL'IN, and R. V. ZHARNOPOVLYU.  
Radical-Chemical Chlorination of Polyethylene.  
1963

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16. Final composition of the system H<sub>2</sub>O-NaCl-KCl at low temperatures

Georgiy V. D., and A. A. Zakharchova. Constitution of the  
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5(3)

SGV/64-59-4-7/27

AUTHORS: Urin, M. G., Dzhagatspanyan, R. V.

TITLE: Quantitative Analysis of the Commercial Product DDT by Means of Infrared Spectrometry (Kolichestvennyy analiz tekhnicheskogo produkta DDT s pomoshch'yu infrakrasnoy spektrometrii)

PERIODICAL: Khimicheskaya promyshlennost', 1959, Nr 4, pp 27 - 28 (USSR)

ABSTRACT: Among the 15 compounds which were found in the commercial DDT the n,n'-isomer DDT (I) has the strongest toxic effect. The spectroscopic method allows an especially precise, simple, and rapid quantitative determination of this isomer. The commercial DDT may be regarded as a mixture of the (I) and o,n'-isomer DDT (II) in this connection the n,n'-isomers DDD and DDKh are also determined in the former. A spectroscopic method was elaborated for the quantitative analysis of two-, three- and four-component-mixtures of the last mentioned substances. The experiments were carried through by means of the spectrometer IKS-11 with a Nernst needle as radiation source. Carbon disulphide was used as solvent. The following analytical wave lengths were used: for (I) 12.3  $\mu$ , for (II) 9.6  $\mu$ , for the n,n'-isomer DDD 12.4  $\mu$  and for the n,n'-isomer DDKh 10.2  $\mu$ . 16

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Quantitative Analysis of the Commercial Product DDT by SOV/64-59-4-7/27  
Means of Infrared Spectrometry

absorption coefficients  $K_{ij}$  (Table 1) were determined and two-, three- and four-component standard mixtures of a similar composition as the commercial DDT-product were analysed (Table 2). The measuring accuracy for (I) and (II) is given with a mean error of 1 and 2.5%. There are 2 figures, 2 tables, and 15 references, 4 of which are Soviet.

Card 2/2

21.3000

77278  
SOV/63-4-6-12/37

AUTHORS: Dzhagatspanyan, R. V., Zetkin, V. I., (Candidates of Chemical Sciences)

TITLE: Concerning Some Radiochemical Reactions of Organic Synthesis

PERIODICAL: Khimicheskaya nauka i promyshlennost', 1959, Vol 4, Nr 6, pp 761-769 (USSR)

ABSTRACT: This is a review of literature data concerning the use of nuclear radiation for the initiation of chain and nonchain reactions; and utilization of reactions initiated by nuclear radiation in the chemical industry. The use of  $\text{Co}^{60}$  and  $\text{Cs}^{134}$  (as well as wastes of nuclear reactors) as the sources of  $\gamma$ -radiation initiating many chemical reactions was discussed. The following processes were considered in detail: chlorination and bromination of organic compounds initiated by radiation. Chlorination of benzene initiated by  $\text{Co}^{60}$  in the absence of  $\text{O}_2$  with "Freon-12" ( $\text{CF}_2\text{Cl}_2$ ) as a diluent

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Concerning Some Radiochemical Reactions  
of Organic Synthesis

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SOV/63-4-6-12/37

lead to the conclusion that there is a critical temperature for each benzene: chlorine: freon ratio in the reacting mixture. At the freezing point the yield of hexachlorocyclohexane and its isomers sharply decreases (to 0.75-1.5 mole/100 ev). A further lowering of the temperature results in a sharp increase in the yield of hexachlorocyclohexane (1,500 mole/100 ev). Thus it was suggested that a chain reaction takes place on the surface and in the crystals of benzene. Chlorination and bromination in the presence of radioactive initiators is conducted at a lower temperature and is safer than catalytic and chlorination under ultraviolet irradiation. Addition of silanes to unsaturated compounds, initiated by  $\gamma$ -radiation, sulfochlorination, and sulfoxidation are discussed. Chlorination of trimethylchlorosilane and ethyltrichlorosilane with elemental chlorine, initiated by

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Concerning Some Radiochemical Reactions  
of Organic Synthesis

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$\gamma$ -radiation, proceeds 100 times faster than chlorination with ultraviolet irradiation. The yield is 90%. The scheme shown in Fig. 2 of industrial chlorination of alkylchlorosilanes initiated by nuclear radiation is suggested. There are 84 references, 39 U.S., 6 U.K., 2 Swiss, 5 German, 3 French, 29 Soviet. The 5 most recent U.S. and U.K. references are: P. Cheek, V. S. Leinnenbom, J. Phys. Chem., 62, Nr 72, 1475 (1958); R. A. Cox, A. J., Swallow, J. Chem. Soc., 3727; (1958); J. F. Black, E. F. Baxter, Soap and Chem. Specialties, 34, Nr 10, 43 (1958); A. M. El. Abbady, L. C. Anderson, J. Am. Chem. Soc., 80, 1737 (1958); E. T. McBee, C. W. Roberts, G. W. R. Puerckhauer, J. Am. Chem. Soc., 79, 484 (1957).

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Concerning Some Radiochemical Reactions  
of Organic Synthesis

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SOV/63-4-6-12/37

Fig. 2. Flow sheet of radiochemical chlorination of alkylchlorosilanes: (1) raw materials storage tank; (2) mixer; (3) heat exchangers; (4) reactor; (5) well for keeping the initiator (source of  $\gamma$ -radiation); (6) shielding; (7) HCl evaporator; (8) steam coil; (9) drop trap; (10) heaters; (11) fractionating columns; (12) storage for the unreacted alkylchlorosilane; (13) storage for the manufactured product; (14) perchlorinated products; (15) raw material pump; (16) HCl exit.

Figure on Card 4/5

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S/882/62/000/002/041/100

A057/A126

AUTHORS: Dzhagatspanyan, R.V., Zetkin, V.I., Zykova, Ye.N., Filippov, M.T.

TITLE: A method for the sulfochlorination of polyethylene

SOURCE: Sbornik izobreteniy; plastmassy i sinteticheskiye smoly. no. 2.  
Kom. po delam izobr. i otkrytiy. Moscow, TsBTI, 1962, 25 [Author's  
certificate no. 128142, cl. 39c, 2501 (appl. no. 637114 of August  
24, 1959)]

TEXT: To accelerate sulfochlorination and to avoid a simultaneous destruc-  
tion of polyethylene the following procedure is suggested: the 3% polyethylene  
solution diluted in carbon tetrachloride is treated with a mixture of gaseous  
sulfur dioxide and chlorine (2 : 1) at 70°C and is Gamma irradiated by a Co<sup>60</sup>  
source with an activity of 1,400 g.equiv. radium, and a dosis capacity of 120 r/  
/sec for 15 - 40 sec. SO<sub>2</sub> and Cl<sub>2</sub> are introduced with a rate of 256 and 178 ml/  
/min, respectively. The obtained polymer contains one SO<sub>2</sub>Cl group per approxi-  
mately 38 methylene groups.

[Abstracter's note: Complete translation]

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5(3)

AUTHORS:

Bardenshteyn, S. B.,  
Dzhagatspanyan, R. V., Zetkin, V. I.

S/032/60/026/02/018/057  
B010/B009

TITLE:

Analysis of a Mixture of Isomeric Trichlorobenzenes and of a  
Mixture of Isomeric Tetrachlorobenzenes by Means of Infrared  
Absorption Spectra

PERIODICAL:

Zavodskaya laboratoriya, 1960, Vol 26, Nr 2, pp 167 - 171 (USSR)

ABSTRACT:

A determination of the composition of a six component mixture consisting of tri- and tetrachlorobenzenes cannot be carried out spectroscopically due to the insufficient resolving power of the IKS-11 spectrometer. For this reason it is recommended to separate the mixture into fractions of the isomers of the tri- and tetrachlorobenzenes prior to analysis. In the present paper the  $6.97\mu$  absorption band was used as the analytical line for 1,2,3-trichlorobenzene. Carefully cleaned preparations were used (Table 1, Figs 1,2) for determining the spectra of the isomers. Carbon tetrachloride was used as solvent. The sample was separated into the isomers by vacuum distillation. It was found experimentally that the Lambert-Beer law holds for 1,3,5- and 1,2,4-trichlorobenzenes as well as for all tetra-

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Analysis of a Mixture of Isomeric Trichlorobenzenes S/032/60/026/02/018/057  
and of a Mixture of Isomeric Tetrachlorobenzenes by B010/B009  
Means of Infrared Absorption Spectra

chlorobenzene isomers up to optical densities of 0.4-0.5, which corresponds to the necessary range of concentrations. 1,2,3-trichlorobenzene has to be determined graphically in the case of concentrations of more than 12% by weight. Data concerning the analytical results as well as the repeatability and calibration solutions are given (Table 2). Two samples of commercial products were analyzed by the above method, and the results were compared with those obtained by vacuum distillation. (Table 3). There are 2 figures, 3 tables, and 5 references, 1 of which is Soviet.

Card 2/2

KOLBASOV, V.I., BARDENSHTEYN, S.B., DZHAGATSPANYAN, R.V.

Quantitative analysis of a mixture of monochlorides, based  
on their infrared absorption spectra. Zav.lab. 26 no.5:587-  
590 '60. (MIRA 13:7)

(Chlorides--Spectra)



FLISSKIY, M.M.; VESELOVSKAYA, I.Ye.; IZHAGATSPANYAN, R.V.

Destruction of graphite anodes in the electrolysis of sodium chloride  
in the presence of sulfate ions. Zhur. prikl. khim. 33 no.8:1901-1903  
Ag '60. (MIRA 13:9)  
(Electrodes, Carbon) (Electrolysis) (Salt)

KOLBASOV, V.I.; BARDEISHTEYN, S.B.; DZHAGATSPANYAN, R.V.

Quantitative determination of impurities in industrial epichlorohydrin  
from infrared absorption spectra. Zav.lab 26 no.10:1120-1122 '60.  
(MIRA 13:10)

(Epichlorohydrin--Spectra)

DZHAGATSPANYAN, R V

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PHASE I BOOK EXPLOITATION

SOV/5486

Vsesoyuznoye soveshchaniye po vnedreniyu radioaktivnykh izotopov i yadernykh izlucheniya v narodnoye khozyaystvo SSSR. Riga, 1960.

Radioaktivnyye izotopy i yadernyye izlucheniya v narodnom khozyaystve SSSR; trudy soveshchaniya v 4 tomakh. t. 1: Obshchiye voprosy primeneniya izotopov, pribory s istochnikami radioaktivnykh izlucheniya, radiatsionnaya khimiya, khimicheskaya i neftepererabatyvayushchaya promyshlennost' (Radioactive Isotopes and Nuclear Radiations in the National Economy of the USSR; Transactions of the Symposium in 4 Volumes. v. 1: General Problems in the Utilization of Isotopes; Instruments With Sources of Radioactive Radiation; Radiation Chemistry; the Chemical and Petroleum-Refining Industry) Moscow, Gosoptekhizdat, 1961. 340 p. 4,140 copies printed.

Sponsoring Agency: Gosudarstvennyy nauchno-tekhnicheskiy komitet Soveta Ministrov SSSR, and Gosudarstvennyy komitet Soveta Ministrov SSSR po ispol'zovaniyu atomnoy energii.

Ed. (Title page): N.A. Petrov, L.I. Petrenko and P.S. Savitskiy; Eds. of this Vol.: L.I. Petrenko, P.S. Savitskiy, V.I. Sinitsin, Ya. M. Kolotyarkin, N.P. Syrkina and R.F. Rozm; Executive Eds.: Ye. S. Levina and B. F. Titskaya; Tech. Ed.: E.A. Mukhina.

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Radioactive Isotopes (Cont.)

BOV/5486

**PURPOSE:** The book is intended for technical personnel concerned with problems of application of radioactive isotopes and nuclear radiation in all branches of the Soviet economy.

**COVERAGE:** An All-Union Conference on problems in the introduction of radioactive isotopes and nuclear radiation into the national economy of the Soviet Union took place in Riga on 12-16 April 1960. The Conference was sponsored by: the Gosudarstvennyy nauchno-tekhnicheskii komitet Soveta Ministrov SSSR (State Scientific and Technical Committee of the Council of Ministers, USSR); Glavnoye upravleniye po ispol'zovaniyu atomnoy energii pri Sovete Ministrov SSSR (Main Administration for the Utilization of Atomic Energy of the Council of Ministers, USSR); Academy of Sciences, USSR; Gosplan USSR; Gosudarstvennyy komitet Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu (State Committee of the Council of Ministers, USSR, for Automation and Machine Building) and the Council of Ministers of the Latvian SSR. The transactions of this Conference are published in four volumes. Volume I contains articles on the following subjects: the general problems of the Conference topics; the state and prospects of development of radiation chemistry; and results and prospects of applying radioactive isotopes and nuclear radiation in the petroleum refining and chemical industries. Problems of designing and manufacturing instruments which contain sources of radioactive radiation and are used for checking and automation of technological processes are examined, along with problems of accident prevention in their use. No personalities are mentioned. References accompany some of the articles.

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Radioactive Isotopes

SOV/5486

- Dzhagatspanyan, R.V., V.I. Zetkin, Ye. N. Zyкова, and M.T. Filippov.  
Sulfochlorination and Sulfooxidation of Polyethylene, Polypropylene,  
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- Breger, A. Kh., V.B. Osipov, and V.A. Gol'din. Universal Installation  
(K-60000) With Co<sup>60</sup> γ-Radiation Source of 60,000 Gram-Equivalent  
Radium Activity, for Simulating Radiation-Chemical Apparatus and  
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Card 8/12

S/019/61/000/003/053/101  
A154/A027

AUTHORS: Dzhagatspanyan, R.V., Zetkin, V.I., and Zykova, Ye.N.

TITLE: A Method of Sulfo-oxidizing Polyethylene

PERIODICAL: Byulleten' izobreteniy, 1961, No. 3, p. 49

TEXT: Class 39c, 25<sub>01</sub>. No. 135639 (667154/23 of May 18, 1960).  
A method of sulfo-oxidizing (sul'fookisleniya) polyethylene by initiated  
reaction of a solution or suspension of polyethylene in an inert solvent with  
sulfurous anhydride and oxygen, distinguished by the fact that the process  
is initiated by  $\gamma$ -irradiation with the use of Co<sup>60</sup> as a radioactive source.

✓

Card 1/1

S/019/60/000/009/020/071  
A152/A029

AUTHORS: Dzhagatspanyan, R.V.; Zetkin, V.I.; Zykova, Ye.N.; Filippov, M.T.

TITLE: A Method of Sulfochlorinating Polyethylene 1

PERIODICAL: Byulleten' izobreteniy, 1960, No. 9, p. 39

TEXT: Class 39c, 2501. No. 128142 (637114/23 of August 24, 1959). A method of sulfochlorinating polyethylene with sulfur dioxide gas and chlorine. It has the following special feature: the reaction is accelerated by means of conducting the process under the influence of  $\text{Co}^{60}$  gamma-radiation.

Card 1/1

*Dzhagatspanyan, R.V.*

00354

25(1) 5.3700(B)

S/019/60/000/02/038/221  
D031/D005

AUTHORS: Dzhagatspanyan, R.V., Filippov, M.T., Motsarev, G.V.,  
Zetkin, V.I., and Koreshkova, N.G.

TITLE: A Method of Obtaining Alkyl and Aryl Polysiloxanes Containing  
Chlorine

PERIODICAL: Byulleten' izobreteniy, 1960, Nr 2, p 14 (USSR)

ABSTRACT: Class 12o, 26<sup>03</sup>. Nr 125564 (624019/23 of 2 April 1959).  
This method is for obtaining alkyl and aryl polysiloxanes  
containing chlorine by chlorination of the alkyl or aryl  
polysiloxanes with elementary chlorine. To increase the out-  
put, the process is carried out when the basic material is  
initiated by  $\gamma$  radiation of radioactive cobalt at a tempera-  
ture of about 0°C.

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5(1)

S/019/59/000/23/046/432  
DO46/DO07

AUTHORS: Dzhagatspanyan, R.V., Kokhanov, G.N., Veselovskaya, I.Ye. and  
Mulin, Ye.V.

TITLE: A Metal Current Lead to the Carbon <sup>6</sup>Graphite <sup>1</sup>Anodes for Electrolyzers

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 23, p 14 (USSR)

ABSTRACT: Class 12h, 2. Nr 124423<sup>6</sup> (611988/23 of 18 November 1958). With addition of claim Nr 617444. To reduce voltage resistance loss in the anodes, the lead is bimetallic. The outer sheeting is made by metal producing a closing layer at the anode polarization.

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5(1)

SOV/19-59-6-29/309

AUTHOR: ~~Dzhagatspanyan~~, R.V., Zetkin, V.I., and Maksimov, M.P.

TITLE: A Method of Chlorinating Alkyl Chlorosilanes with Chlorine

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 6, p 10 (USSR)

ABSTRACT: Class 12o, 26<sub>01</sub>. Nr 118500 (581222 of 30 July 1957).  
To increase the output and the speed of reaction, and to decrease the temperature, the reaction zone is being irradiated with  $\gamma$ -rays.

Card 1/1

54600

53700

2209

24372  
S/063/61/006/002/004/004  
A105/A129

AUTHORS: Dzhagatspanyan, R. V., Zetkin, V. I., Filippov, M. T.

TITLE: A study of the radiation addition of silicochloroform to certain olefines

PERIODICAL: Zhurnal vsesoyuznogo khimicheskogo obshchestva im. D. I. Mendeleyeva, v. 6, no. 2, 1961, 231 - 232

TEXT: The authors refer to the reaction of addition of hydridesolanes at the multiple bonds of organic compounds as being the most promising process for the production of various silicon-organic monomers of high purity. The present article deals with an investigation of the addition of trichlorosilane to nonene-1 and cyclohexene under the action of  $\gamma$  - radiation at two dose rates (70 r/sec and 123 r/sec), 25 and 70°C and a molar ratio of the reagents of 1:1.  $Co^{60}$  was the radiation source having an activity of 1,400 g-equiv. of radium. The reaction products were decomposed by fractional distillation. The formed compounds were identified by the chlorine content and the determination of carbon and hydrogen could be carried out by transforming the halidesilanes into the corresponding alkoxy-derivatives. Tables 1 and 2 show the results of the in-

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S/063/61/006/002/004/004

A study of the radiation addition of silicochloroform.. A105/A129

vestigations of the addition of trichlorosilane to nonene-1. It is seen that an increase in the dosage from 70 r/sec to 123 r/sec increases the rate of reaction. Table 3 lists the results of the addition of trichlorosilane to cyclohexene. The values of G calculated from the experimental data obtained by the present authors in the reaction of addition of trichlorosilane to nonene-1 and cyclohexene were found to be comparatively low and close to the values of other experiments (Ref. 4). Under the effect of  $\gamma$ -emission the addition of trichlorosilane to nonene was found to take place with about the same yield as when initiated with benzoyl peroxide viz. 60.9% at 85°C in the presence of weight 3% of benzoyl peroxide (Ref. 5). There are 3 tables and 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc.

Table 1: 1 - Addition of trichlorosilane to nonene-1. Dose rate 70 r/sec, temperature 25°C, mol. ratio 1:1; 2 - reagent charges; 3 - radiation time h; 4 - yield, % of theoretical; 5 - radiation-chemical yield G (mol/sec 100 ev); 6 - nonene-1; 7 -  $\text{SiHCl}_3$ .

Card 2/5

9.4160 (also 2801)

20704  
S/120/61/000/001/042/062  
E192/E382

11.8100  
AUTHORS: Dzhagatspanyan, R.V., Maksimov, M.P. (Deceased)  
and Yesel'son, M.P.

TITLE: A Device for Recording High-speed Processes

PERIODICAL: Pribery i tekhnika eksperimenta, 1961, No. 1,  
pp. 132 - 137

TEXT: Continuous recording of the changes of infra-red spectra during chemical reactions is of considerable practical importance but very often the speed of response of the infra-red receivers (wavelengths from 2 - 20  $\mu$  or more) is not fast enough to give a suitable resolving time. A faster device was proposed by Bonch-Bruyevich and Imas (Ref. 1) in 1955 but it resulted in the deterioration of the signal-noise ratio of the receiver. In the following a high-speed recording instrument with an amplifier furnished with a bolometer inertia-correcting circuit is described. The recording speed for a single spectrum can be as high as  $10^{-2}$  or  $10^{-3}$  sec, the resolving time being  $10^{-4}$  to  $10^{-5}$  sec. The instrument can work as a pyrometer (recording rapid changes of the incident

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20704

S/120/61/000/001/042/062  
E192/E382

A Device for Recording ....

thermal radiation) or it can perform measurements at a chosen point of the spectral range. When operating as a spectrometer the instrument can register infra-red spectra  $I = f(\lambda)$  of various materials at speeds from  $1 - 10^3$  sec. The limiting resolving time of the instrument is  $6 \times 10^{-3}$  which is equivalent to  $10^{-4}$  sec. Consequently, by recording a successive range of spectra it is possible to plot the spectrum  $I = \varphi(\lambda, t)$  of a chemical reaction. When used as a pyrometer the instrument can register rapid changes of the radiation intensity as a function of time ( $I = f(t)$ ) at speeds ranging from  $1 - 10^3$  sec, the limiting resolving time being of the order of  $10^{-4}$  sec. This is necessary in solving various engineering problems such as the investigation of explosions, rapid combustion, etc. In both types of operation a calibrating voltage curve is recorded simultaneously with the curves representing the investigated processes; the calibration curve permits determination of the duration of the

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S/120/61/000/001/042/062  
E192/E382

A Device for Recording ....

process and its significant sections. The spectra are recorded by means of a long-persistence cathode-ray tube (oscillograph ENO-1 (ENO-1)). The instrument consists of the following units: 1) a pre-amplifier which is situated in the immediate vicinity of the receiver; 2) the main amplifier, provided with an inertia-correction circuit; 3) an electronic switch having two inputs and operating at the frequency of 200 kc/s; 4) a calibration oscillator producing sinusoidal waveforms having frequencies of 10, 50, 100, 500 and 1 000 c.p.s; 5) a control pulse generator giving rectangular pulses repeated at a frequency of 50 c.p.s; 6) a synchronisation amplifier, permitting synchronisation of the time base by a positive or negative internal signal; 7) a triggered time base operating at frequencies 1, 3, 10, 30, 100, 300 and 1 000 c.p.s. and power supplies comprising high-voltage and low-voltage rectifiers and an electronic stabiliser having a stabilisation coefficient of 1200. The main amplifier consists of an input cathode follower, a two-stage amplifier furnished with high- and low-frequency correction circuits and an inertia-correcting circuit which is separated

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A Device for Recording ....

from the amplifier by means of a cathode follower. The bandwidth of the amplifier at 3 db extends from 1 c.p.s. to 0.8 Mc/s. The inertia-correction is achieved by means of an RC network. The range of the time constants of the receivers is divided into the following sub-ranges: 1-3, 3-8, 5-15, 10-30 and 30-100  $\mu$ s. The desired sub-range is provided by switching-in a suitable capacitance, while the continuous control is achieved by varying the resistance. The electronic switch consists of a multivibrator operating at a frequency of 200 kc/s, a limiter and two controlled tubes. The switch is perhaps unusual in that a cathode-coupled feedback stage is used as the limiter. The calibration oscillator is based on the usual RC circuit. The synchronisation amplifier consists of two tubes, while the time-base generator comprises two multivibrators, a charging pentode and a cathode follower. The time constant of the correction network should be made equal to the time constant of the receiver before the instrument can be used in measurements. This is done by introducing a

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A Device for Recording ....

rotating (modulating) disc between the source and the receiver, the purpose of the disc being to produce light pulses having a sharp leading edge. The instrument was tested as a pyrometer, a photoresistor having a time constant of 40  $\mu$ s being used as a receiver. There are 4 figures and 1 Soviet reference.

SUBMITTED: December 28, 1959

X

Card 5/5

21135

S/19C/61/003/004/01C/C14  
B101/B207

15 2116

22-00-072

AUTHORS: Dzhagatsoyan, R. V., Zetkin, V. I., Motsarev, G. V.,  
Filippov, M. T.

TITLE: Chlorination of organo-silicon monomers and polymers under  
the action of gamma rays. I. Chlorination of liquid poly-  
phenyl-methyl siloxane and of polydimethyl siloxane rubber.  
The infrared spectra of the chlorination products

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 4, 1961, 607-612

TEXT: In the introduction, the authors state that initiating the chlorina-  
tion of organosilicon compounds by means of ultraviolet light proceeds too  
slowly, however, that chemical initiators as e.g., benzoyl peroxide re-  
quire a higher temperature at which a sufficient chlorination of methyl  
chloro silanes is not possible owing to their instability. Therefore, the  
present study aimed at initiating chlorination by means of gamma rays of  
Co<sup>60</sup> at low temperatures. The following compounds were chlorinated:

1) Polyphenyl-methyl siloxane (poly-PMS) (molecular weight 2000), and 2)  
three samples of polymethyl siloxane rubber (poly-MSR) (molecular weight

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S/190/61/003/004/010/014  
B101/B207

## Chlorination of .

400,000-500,000). 4-5% solutions of the polymers in  $\text{CCl}_4$  were used, to which chlorine taken from the cylinder was added. The samples were irradiated in sealed ampoules at  $0^\circ\text{C}$  with gamma rays of  $\text{Co}^{60}$ , activity 1400  $\text{C. equ}$  radium. Tables 1 and 2 list the results. Heating with 40% KOH of a chlorinated poly-PMS sample with 55.5% Cl yielded a paste from which crystals with a chlorine content of 64.3-66.7% were separated. On the basis of analytical results, they obtain the empirical formula  $\text{C}_6\text{H}_6\text{Cl}_4$  or  $\text{C}_6\text{H}_4\text{Cl}_4$ .

The infrared spectra of the oily residue of hydrolysis showed an intensive band at 9-10  $\mu$  which corresponds to the Si-O bond. Chlorination of poly-MSR led, according to the sample used, to quite different results with respect to the intensity of reaction and the chlorine content of the product obtained. This is due to impurities (catalyst residues) in commercial poly-MSR. Study of the infrared spectra yielded 3690 and 3615  $\text{cm}^{-1}$  bands both in initial and chlorinated rubber. These bands are due to OH groups (3690  $\text{cm}^{-1}$  free OH; 3615  $\text{cm}^{-1}$  OH with H bond). Accordingly, commercial poly-MSR contains silanol groups. As a result of spectral analysis the following is stated: though the IR spectra of chlorinated poly-PMS and poly-MSR differ from those of the initial samples, no absorption bands were found to exist which are characteristic of chlorinated substances.

and 2.5

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B101/B207

Chlorination of ...

There are 2 figures, 5 tables, and 14 references: 8 Soviet-bloc and 6 non-Soviet-bloc. The 2 references to English-language publications read as follows: Ch. Tamborcki, H. W. Post, J. Org. Chem., 17, 1400, 1952; C. W. Joung, P. C. Servais, C. C. Currie, M. J. Hunter, J. Amer. Chem. Soc., 70, 3750, 1948.

SUBMITTED: July 15, 1960

① Опыт №	② Загружено реагентов, г		③ Соотно- шение молей Cl основомоль	④ Мощность дозы, р/сек	⑤ Премь облуче- ния, мин	⑥ Пес продукта, г	⑦ Содержание хлора, %	
	② хлор	② полимер					⑦ найденно	⑦ расчет- лено
1	4,70	4,05	1,97:1	70	30	8,874	48,0	51
2	7,2	4,85	2,98:1	70	30	11,425	59,5	61
3	4,9	3,12	3:1	120	2	6,4819	50,1	61
4	4,9	3,12	3:1	120	5	7,0128	54,0	61
5	4,9	3,12	3:1	120	10	7,0840	58,7	61
6	2,43	4,08	1:1	120	15	7,1914	33,9	34,3
7	3,3	3,12	2,03:1	120	15	5,9015	50,2	51

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Chlorination of ...

Table 1. Chlorination of a 4% solution of  $[(C_6H_5)(CH_3)SiO]_n$  in  $CCl_4$  at  $0^\circ C$ .  
Legend: 1) No. of the experiment; weighed portion, g; a) chlorine; b) polymer; 3) ratio mole Cl: mole structure unit of polymer; 4) dose, r/sec; 5) time of irradiation; min; 6) weight of the product obtained; 7) chlorine content; c) found; d) calculated on the assumption of chlorine addition to the double bonds of the ring.

1 Эксп. №	2 Реагенты		3 Обра- зец	4 Соотноше- ние, моль Cl основомоль	5 Темпера- тура, °C	6 Мощность дозы, р/сек	7 Время облуче- ния, мин.	8 Содержание хлора в продукте, %	
	а) хлор	б) полимер						в) найде- но	г) вычис- лено
1	3,99	3,83	1	1,09:1	40	70	30	32,3	32,8
2	7,77	3,83	1	2,05:1	40	70	15	41,1	50,0
3	7,93	3,83	1	2,17:1	0	70	30	48,9	52,1
4	10,97	3,83	1	3:1	22,5	70	30	49,8	59,2
5	10,97	3,83	1	3:1	0	70	60	55,3	59,2
6	13,2	3,14	2	4,4:1	0	120	10	64,6	67,8
7	2,38	2,49	3	1:1	20	—	—	37,7	32,4
8	4,08	2,49	3	1,64:1	20	—	—	46,6	45,0
9	4,44	1,87	3	2,5:1	0	120	5	60,7	54,2
10	5,28	1,87	3	2,97:1	0	120	5	63,0	58,5

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S/190/61/003/004/010/014  
B101/B207

Chlorination of ...

Table 2. Chlorination of a 4% solution of  $[(CH_3)_2SiO]_n$  in  $CCl_4$ .

Legend: 1) No. of experiment; 2) weighed portion, g; a) chlorine; b) polymer; 3) No. of sample; 4) ratio mole Cl : mole structure unit of polymer; 5) temperature; 6) dose, r/sec; 7) irradiation time, min; 8) chlorine content in the product; c) found; d) calculated; \*) 10 hr in scattered light.

X

Card 5/5

DZHAGATSPANYAN, R.Y.; ZETKIN, V.I.; FIKIPPOV, M.T.

Study of the radiation induced addition of silicochloroform to  
some olefins. Zhur. VKHO 6 no.2:231-232 '61. (MIRA 14:3)  
(Silane) (Olefins)

S/032/61/027/003/010/025  
B101/B203

AUTHORS: Kolbasov, V. I., Bardenshteyn, S. B., and Dzhagatspanyan, R. V.

TITLE: Quantitative analysis of crude trichloro ethane by means of infrared absorption spectra

PERIODICAL: Zavodskaya laboratoriya, v. 27, no. 3, 1961, 295-296

TEXT: To elaborate an efficient method for the simultaneous production of perchloro-vinyl resin and trichloro ethane it was necessary to analyze the crude trichloro ethane which consisted of 50-60% 1, 2-dichloro ethane, 40-50% 1, 1, 2-trichloro ethane, and 3-5% tetrachloro ethanes. An analysis of the mixture by rectification takes much time (2-3 days) and is independent. The present paper describes a method for the quantitative analysis of crude trichloro ethane on the basis of infrared spectra taken with an MKC-14 (IKS-14) split-beam spectrophotometer. Such an analysis takes only about one hr. The infrared spectra of the substances concerned are described in publications: 1, 2-dichloro ethane (Ref. 1: A. Eerton, Chim. analyt. 38, No. 6, 207 (1956); Ref. 2: G. Pirlet, Bull. Soc. chim. belges, 58, No. 1, 28 (1949); Ref. 3: J. K. Brown, H. Sheppard, Trans. Faraday Soc,

Card 1/5



S/032/61/027/003/010/025  
B101/B203

## Quantitative analysis ...

48, 128 (1952)); 1, 1, 2-trichloro ethane (Ref. 2); 1, 1, 1, 2-tetrachloro ethane (Ref. 2 and Ref. 4: I. R. Nielsen, C. Liang, Z. W. Daasch, J. Opt. Soc. Amer., 43, 1071 (1953)); 1, 1, 2, 2-tetrachloro ethane (Refs. 1, 2, 4), as well as the method for the quantitative determination of their mixtures (Ref. 2, Ref. 5: A. I. Finkel'shteyn, Ts. N. Roginskaya et al., Zavodskaya laboratoriya, XXV, 8, 932 (1959)). The proposed analysis of the quaternary mixture of 1, 2-dichloro ethane, 1, 1, 2-trichloro ethane, 1, 1, 1, 2- and 1, 1, 2, 2-tetrachloro ethane is distinguished from the analysis described in Refs. 2, 5 by the use of the MKC-14 (IKS-14) split-beam spectrometer, and the calculation of concentration on the basis of standard mixtures using the method of least squares (pentachloro ethane and 1, 1, 2, 2-tetrachloro ethane give superimposed bands at  $1017\text{ cm}^{-1}$ , and are determined summationally).  $\text{CCl}_4$  was used as a solvent. Well purified preparations made by E. Sonin, the constants of which agreed with published data, were employed (Table 1). The figure shows the infrared spectra of the four substances studied (thickness of the absorption layer 0.01 mm). The optical density was determined according to Ref. 6 (Z. Williams, Anal. Chem. 29, No. 10, 1551 (1957)), the concentration of components was calcu-

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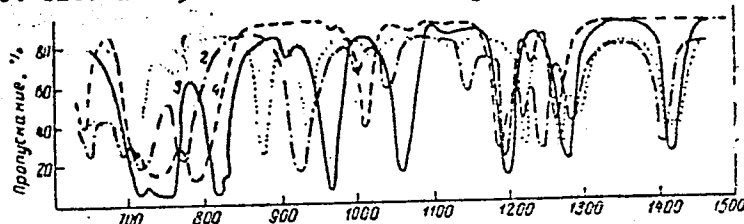
S/032/61/027/003/C10/C25  
B101/B203

Quantitative analysis ...

lated by means of a system of four linear equations. To determine the coefficients of the equations, standard mixtures were prepared for the concentrations required, and the optical density of the analytical absorption bands of the components was determined. A total of 95 binary, ternary, and quaternary mixtures were prepared. The measured results were evaluated by the method of least squares. There are 1 figure, 2 tables, and 9 references: 4 Soviet-bloc and 5 non-Soviet-bloc. [Abstracter's note: Complete translation.]

Legend to the figure:

- 1) 1, 2-dichloro ethane;
- 2) 1, 1, 2-trichloro ethane;
- 3) 1, 1, 2, 2-tetrachloro ethane;
- 4) 1, 1, 1, 2-tetrachloro ethane



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Quantitative analysis ...

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Legend to Table 1: 1) Compound, 2) boiling point, 3) specific gravity,  
4) refractive index, 5) 1, 2-dichloro ethane, 6) 1, 1, 2-trichloro ethane,  
7) 1, 1, 1, 2-tetrachloro ethane, 8) 1, 1, 2, 2-tetrachloro ethane

Legend to Table 2: 1) Compound, 2) absorption band,  $\text{cm}^{-1}$ , 3) thickness of  
absorption layer, mm, 4) concentration, g/ml, 5) width of slit, a) mm,  
b) spectral,  $\text{cm}^{-1}$ , 6) root mean square error of particular concentrations  
in the range: %, 7) 1, 2-dichloro ethane, 8) 1, 1, 2-trichloro ethane,  
9) 1, 1, 1, 2-tetrachloro ethane, 10) 1, 1, 2, 2-tetrachloro ethane,  
11) without solvent

Соединение 1	Температура кипения °C 2	Удельный вес 3	Показатель преломления 4
1,2-дихлорэтан	83,5	$d_{20}^{20} = 1,2563$	$n_D^{20} = 1,4440$
1,1,2-трихлорэтан	113,0	$d_4^{25} = 1,4406$	$n_D^{20} = 1,4718$
1,1,1,2-тетрахлорэтан	128,0	$d_4^{20} = 1,5539$	$n_D^{20} = 1,4823$
1,1,2,2-тетрахлорэтан	143,5—144,5	$d_{20}^{20} = 1,5955$	$n_D^{20} = 1,4935$

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Quantitative analysis ...

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B101/3203

Таблица 2 1. Соединение	2. Полоса поглощения, см <sup>-1</sup>	3. Толщина поглощающего слоя, мм	4. Концентрация в г/мл	5. Ширина щели		6. Квадратичная относительная ошибка для определения концентрации в пределах, %	
				2	3		
				мм	спектральная см <sup>-1</sup>	0.4-5	5-100
7 1,2-дихлорэтан	883	1.35	0.032	0.36	5.3	7.5	1.5
8 1,1,2-трихлорэтан	934	0.45	0.032	0.32	5.7	10.5	1.6
7 1,1,1,2-тетрахлорэтан	960	1.35	0.10	0.30	5.9	7.5	1.5
10 1,1,2,2-тетрахлорэтан	1017	0.22	Без расчётной ретель	0.26	6.2	10.5	2.0

Card 5/5

FLISSKIY, M.M.; VESELOVSKAYA, I.Ye.; DZHAGATSPANYAN, R.V.; CHERNYAVSKAYA, O.V.

Anodic process on graphite in the electrolysis of sodium chloride  
in the presence of sulfate ions. Zhur.prikl.khim. 34 no.11:2483-  
2487 N '61. (MIRA 15:1)

(Sodium chloride)  
(Sulfates)

(Electrolysis)

MARTYNOV, Yu.M.; KORNBLIT, I.I.; SMIRNOVA, N.P.; DZHAGATSPANYAN, R.V.

Determination of metal impurities in silicon tetrachloride  
and silicon dioxide by the spectrochemical method.  
Zav.lab. 27 no.7:839-842 '61. (MIRA 14:7)  
(Silicon compounds) (Metals--Analysis) (Spectrochemistry)

YAKIMENKO, L.M.; KOKHANOV, G.N.; VESELOVSKAYA, I.Ye.; DZHAGATSPANYAN, R.V.

Investigating the electrochemical behavior of titanium and some  
other metals during the electrolysis of chloride solutions. Khim.  
prom. no.1:43-47 Ja '62. (MIRA 15:1)  
(Titanium—Electric properties) (Chlorides) (Electrolysis)

LEVKOVICH, M.M.; MEZHOV, V.D.; DZHAKELI, T.N.

Production of secondary alkyl sulfates. Khim. i tekhn. topl. 1  
masel 6 no. 5:24-29 My '61. (MIRA 14:5)  
(Paraffins) (Sulfuric acid)



DZHALALOV, A.D., dotsent; MUMINOV, B.M., ordinator

Dynamics of the gastrocolic reflex in gastric and duodenal ulcer.  
Med. zhur. Uzb. no.4:20-23 Ap '61. (MIRA 14:5)

1. Iz kliniki gosital'noy terapii Samarkandskogo gosudarstvennogo  
meditsinskogo instituta imeni I.P.Pavlova.  
(REFLEXES) (PEPTIC ULCER)

GORYAYEV, M.I.; DZHALILOV, D.R.

Study of the essential oil from needles of the juniper (*Juniperus*  
*turkestanica* kom.) Izv. AN Kazakh. SSR Ser. khim. no. 2:107-113  
'60. (MIRA 14:5)  
(Essences and essential oils) (Juniper)

15.9205

S/081/62/000/012/058/063  
B158/B101

AUTHORS: Dzhagatspanyan, R. V., Zetkin, V. I., Motsarev, G. V.,  
Filippov, M. T.

TITLE: Chlorination of silicon-containing monomers and polymers  
under the effect of gamma-radiation

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 12, 1962, 612-613  
abstract 12P282 (Sb. "Radioakt. izotopy i yadern. izlucheniya  
v nar.kh-ve SSSR. V. I.". M., Gostoptekhizdat, 1961,  
197-200)

TEXT: Polydimethylsiloxane rubber (I) and polyphenylmethylsiloxane (II)  
as well as a number of monomers were chlorinated at 0°C under the action  
of  $\gamma$ -radiation ( $\text{Co}^{60}$  with an activity of 1400 g-equiv of Ra). Chlorination  
of I takes place easily and rapidly until the introduction of an average  
of two Cl atoms into the chain of the polymer, after which the process  
rate falls sharply. In a metal autoclave at both 0°C and 60°C  
destruction of the polymer takes place. With chlorination of II (molar  
Card 1/2

Chlorination of silicon-containing ... S/081/62/000/012/058/063  
B158/B101

ratio of Cl:siloxane = 2:1 and 3:1) substitution and addition chlorination takes place in the aromatic ring. With chlorination of  $(CH_3)_3ClSi$  (molar ratio of  $Cl_2$ :silane = 0.51:1) the basic product is a monochlorine derivative; chlorination of 18.6 g of ethyl-trichlorosilane (molar ratio of  $Cl_2$ :silane = 0.35:1) gives 6.5 g of  $\alpha$  and  $\beta$ -chloroethyl-trichlorosilanes. Chlorination of methyl-phenyl dichlorosilane results in the formation of  $(C_6H_2Cl_3)(CCl_3)SiCl_2$  (b. p. 185-188/10 mm). [Abstracter's note: Complete translation.]

Card 2/2

DZHAGATSPANYAN, R.V.; ZETKIN, V.I.; FEDCHENKO, V.S.

Radiative-chemicalsulfochlorination of polyisobutylene. Plast.-  
massy no.5:6-9 '62. (MIRA 15:4)  
(Propene) (Chlorosulfonylation) (Radiation)

S/019/62/000/017/003/054  
A154/A126

AUTHORS: Dzhagatspanyan, R.V., Yakimenko, L.M., Gershenovich, A.I., Zetkin,  
V.I., Pospelov, V.Ye.

TITLE: A method of sulfochlorinating polypropylene

PERIODICAL: Byulleten' izobreteniy, no. 17, 1962, 20

TEXT: Class 12o, 23<sub>01</sub>. No. 149773 (750759/23-4 of October 30, 1961).  
Dependent on Author's Certificate No. 128142. This method of sulfochlorinating  
polypropylene is dependent on Author's Certificate No. 128142 and differs in that,  
to avoid the use of a solvent at room temperature, the process is carried out in  
a fluidized bed of polypropylene.

[Abstracter's note: Complete translation]

Card 1/1

S/844/62/000/000/066/129  
D204/D307

AUTHORS: Dzhagatspanyan, R. V., Zetkin, V. I., Motsarev, G. V.  
and Filippov, M. T.

TITLE: The chlorination of phenylmethyldichlorosilane (I) and  
dimethyldichlorosilane (II) under the action of  $\gamma$  irradi-  
ation

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khi-  
mii. Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962,  
386-389

TEXT: I was chlorinated in sealed ampoules, at 0 and 20°C, under  
 $\gamma$  irradiation (~120 r/sec, over 15 or 30 min), with molar ratios  
(n) of  $\text{Cl}_2$  : I equal to 0.25:1, 0.5:1, and 1:1, since polychlori-  
nated silanes are of interest in preparing fluorinated Si-contain-  
ing monomers and polymers. In contrast to chemically initiated  
chlorination of I, the present reaction was one of addition of  $\text{Cl}_2$   
into the aromatic ring rather than substitution into the methyl

Card 1/2

The chlorination of ...

3/844/62/000/000/066/129  
D204/D307

group, the main product being a viscous oil, which by chemical and ir spectroscopic tests proved to be  $\text{CH}_3.\text{C}_6\text{H}_5\text{Cl}_6\text{SiCl}_2$ . A small amount of  $\text{CH}_3$ -chlorinated compounds was also formed. No product in which chlorination of  $\text{CH}_3$ - and  $\text{C}_6\text{H}_5$ -groups occurred simultaneously was observed, although it might form in initial mixtures richer in  $\text{Cl}_2$ . Silane II was similarly chlorinated at  $0^\circ\text{C}$ , with n equal to 0.3:1 and 0.5:1, under 2 min doses of  $\gamma$  rays at 120 r/sec, to give ~30% yields of the monochloride and 5 to ~17% yields of the dichloride, the latter becoming greater with increasing n. There are 4 tables.

ASSOCIATION: NII Goskomiteta, Soveta Ministrov SSSR po khimii  
(NII for Chemistry of the State Committee, Council of Ministers of the USSR)

Card 2/2



Radiational sulfo-oxidation ...

S/844/62/000/000/067/123  
D204/D307

by total sulfuric and sulfonic acids ( $H_2SO_4$  forms as a by-product) increased linearly with the dose of irradiation, the latter varying from 1 to 4 hours at 110 r/sec. The yields were higher for the nonane (8.7 mg - eqts after 4 hours) than for the undecane (7.04 mg - eqts after 4 hours). There are 3 figures and 2 tables.

ASSOCIATION: NII Goskomiteta, Soveta Ministrov SSSR po khimii (NII for Chemistry of the State Committee, Council of Ministers of the USSR)

Card 2/2

S/844/62/000/000/069/129  
B20+/D307

AUTHORS: Yakimenko, L. M., Dzhagatspanyan, R. V., Zetkin, V. I.,  
Korolev, B. M. and Maksimov, M. P. (deceased)

TITLE: Chlorine exchange between hexachlorocyclohexane (I) and  
carbon tetrachloride, under the action of  $\gamma$  radiation

SOURCE: Trudy II Vsesoyuznogo soveshchaniya po radiatsionnoy khimii.  
Ed. by L. S. Polak. Moscow, Izd-vo AN SSSR, 1962, 398-402

TEXT: The behavior was studied of purified  $\alpha$ -,  $\beta$ -,  $\gamma$ -, and  $\delta$ -isomers of I, with  $\text{CCl}_4$  labelled with  $\text{Cl}^{36}$ , under the action of  $\gamma$ -irradiation at 120 r/sec over 1 - 15 hours, at  $\sim 30^\circ\text{C}$ . The mixtures consisted of 250 mg of I, 8 ml of  $\text{CCl}_4$ , and 1 ml of labelled  $\text{CCl}_4$ , and the chlorine exchange was assessed by the change in the activity of I (dissolved in 2.5 ml of benzene). No transfer of  $\text{Cl}^{36}$  took place in the absence of irradiation. The activity of  $\alpha$ -I and  $\beta$ -I rose to a constant value of  $\sim 1\%$  (arbitrary units) after 5 - 6  
Card 1/2

Chlorine exchange between ...

S/844/62/000/000/069/129  
D204/D507

hours, whilst that of  $\gamma$ -I increased to a constant 0.6% after 8 - 10 hours. The activity of  $\delta$ -I was 0.5% after 6 hours. At comparatively low doses of irradiation the processes involved are chiefly the chlorination of I and Cl-exchange, whilst further irradiation allows a 3rd reaction, loss of HCl by I (to form pentachlorocyclohexene), to proceed. The rise of the activity of I might be ascribed to a dynamic equilibrium between these processes, but is more probably due to: (1) radiolysis of  $\text{CCl}_4$  to  $\text{CCl}_3$  and Cl, formation of  $\text{C}_2\text{Cl}_6$  and  $\text{Cl}_2$ , and recombination to  $\text{CCl}_4$ ; (2)  $\text{RCl} + \text{Cl} \rightarrow \text{HCl} + \text{R}'\text{Cl}$ ,  $\text{R}'\text{Cl} + \text{Cl} \rightarrow \text{R}''\text{Cl}$ ,  $\text{R}''\text{Cl} + \text{CCl}_3 \rightarrow \text{R}'''\text{Cl}$ ,  $\text{R}'''\text{Cl} + \text{CCl}_4 \rightarrow \text{RCl} + \text{CCl}_3$ ; (3)  $\text{RCl} + \text{Cl} \rightarrow \text{RCl}$  (exchange reaction); (4)  $\text{RCl} \rightarrow \text{HCl} + \text{R}'''\text{Cl}$  (dehydrohalogenation). Reaction (4) and chlorination reaction (2) are in agreement with the observed considerable evolution of HCl. There are 2 figures and 1 table.

ASSOCIATION: NII Goskomiteta, Soveta Ministrov SSSR po Khimii (NII for Chemistry of the State Committee, Council of Ministers of the USSR)

Card 2/2

S/076/62/036/008/004/011  
B101/B144

AUTHORS: Filippov, M. T., Dzhagatspanyan, R. V., Motsarev, G. V., and Zetkin, V. I.

TITLE: Infrared spectra of organochlorosilanes containing chlorine in the organic group

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 8, 1962, 1751 - 1754

TEXT: IR spectra of  $\text{QH}_3\text{C}_6\text{H}_5\text{SiCl}_2$  (I);  $\text{CH}_2\text{ClC}_6\text{H}_5\text{SiCl}_2$  (II);  $\text{CHCl}_2\text{C}_6\text{H}_5\text{SiCl}_2$  (III);  $\text{CCl}_3\text{C}_6\text{H}_5\text{SiCl}_2$  (IV);  $(\text{CH}_3)_2\text{SiCl}_2$  (V);  $\text{CH}_2\text{ClCH}_2\text{SiCl}_2$  (VI), and  $\text{CHCl}_2\text{CH}_2\text{SiCl}_2$  (VII) were studied with the following results: (1) The 3.35 and 3.4  $\mu$  bands correspond to the asymmetric and symmetric stretching vibrations of CH in the methyl group. (2) The position of the bands in the range 11-16  $\mu$  strongly depends on the degree of chlorination: The 11.76 - 12.7  $\mu$  band of V in VI becomes weaker and is shifted toward longer waves; in VII it splits into two bands. (3) The 12.58  $\mu$  band of I corresponds to the Si-bound  $\text{CH}_3$  group. It changes with the degree of

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Infrared spectra of...

S/076/62/036/008/004/011  
B101/B144

chlorination and disappears in IV. (4) The bands of 13-15 $\mu$  for I-IV correspond to the  $C_6H_5$  groups. (5) The 15.62 $\mu$  band of VI and the 15.38 $\mu$  band of II are ascribed to the  $SiCH_2Cl$  group. There are no bands in this range for the other compounds. (6) In the case of IV, 11.36 and 11.90 $\mu$  bands were observed which appear due to symmetric and asymmetric stretching vibrations of the C-Cl bond in  $CCl_3$ . This was confirmed by the fact that  $CCl_3(CH_3)Si(OC_2H_5)_2$  and  $(CCl_3)_2Si(OC_2H_5)_2$  also showed bands in the range 11-11.4 $\mu$  which were absent in compounds containing no  $CCl_3$  group. There are 5 figures and 2 tables.

SUBMITTED: November 9, 1960

Card 2/2

YAKIMENKO, L.M.; DZHAGATSPANYAN, R.V.; VESELOVSKAYA, I.Ye.; KHODKEVICH, S.D.

Use of platinum-titanium anodes in the chlorine industry.  
Khim.prom. no.10:728-735 0 '62. (MIRA 15:12)  
(Chlorine industry) (Electrodes, Titanium)  
(Electrodes, Platinum)

DZHAGATSPANYAN, Rafael' Vachaganovich; ROMM, Rudol'f Filippovich;  
TATOCHENKO, Lev Kirillovich; FINKEL', E.E., red.; KOGAN, V.V.,  
tekhn. red.

[Application of radioisotopes to the control of chemical processes]Primenenie radioaktivnykh izotopov dlia kontrolya khimicheskikh protsessov. Moskva, Goskhimizdat, 1963. 343 p.  
(MIRA 16:3)

(Radioisotopes—Industrial applications)  
(Automatic control)

KOLBASOV, V.I.; BARDENSHTEYN, S.B.; DZHAGATSPANYAN, R.V.; ZAKHAROV, Ye.V.

Quantitative analysis of technical m-chloronitrobenzene by  
infrared absorption spectra. Zav.lab. 28 no.11:1326-1327 '62.  
(MIRA 15:11)

(Nitrobenzene--Spectra)



PHASE I BOOK EXPLOITATION

SOV/6377

Dzhagatspanyan, Rafael' Vachaganovich, Rudol'f Filippovich Romm, and  
Lev Kirillovich Tatochenko

Primeneniye radioaktivnykh izotopov dlya kontrolya khimicheskikh  
protssessov (Application of Radioactive Isotopes in the Control of  
Chemical Processes) Moscow, Goskhimizdat, 1963. 343 p. Errata  
slip inserted. 5000 copies printed.

Ed.: E. E. Finkel'; Tech. Ed.: V. V. Kogan.

PURPOSE: This book is intended for scientific and technical-engineer-  
ing personnel working with devices equipped with radioisotopic  
sensors.

COVERAGE: The book deals with fundamentals of the theory of devices  
equipped with radioisotopic sensors and the use of these devices  
for controlling and regulating chemical-engineering processes.  
Methods for detection and recording of nuclear radiation and basic  
means of protection from such radiation are described. No  
Card 1/A2

Application of Radioactive Isotopes (Cont.)

SOV/6377

personalities are mentioned. Lists of references follow each of the three parts of the book.

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PART I. PHYSICAL PRINCIPLES OF THE USE OF RADIOACTIVE ISOTOPES

Ch. 1. Origin and Aspects of Nuclear Radiation 9

Ch. 2. Methods for Recording Nuclear Radiation 43

Bibliography to Part I 84

PART II. STANDARD CIRCUIT DIAGRAMS, THEORETICAL  
FUNDAMENTALS, AND OPERATING PRINCIPLES OF INDUSTRIAL DEVICES  
WITH RADIOISOTOPIC SENSORS

Ch. 3. Principles of the Use of Radiation Detectors in  
Radioisotopic Sensors 85

Card 2/42

DZHAGATSPANYAN, R.V.; ZETKIN, V.I.; POSPELOV, V.Ye.; FEDCHENKO, V.S.

Radiation-induced chemical sulfochlorination of polydimethyl-  
siloxane. Plast.massy no.2:16-18 '63. (MIRA 16:2)  
(Siloxanes) (Chlorosulfonylation) (Radiation)

L 12964-63  
 ACCESSION NR: AP3000393  
 EPR/EMF(j)/EPF(c)/EWT(m)/BDS AFPTC/ASD Ps-4/Pc-4/Pr-4 RH/WH  
 S/0191/63/000/005/0004/0007

AUTHOR: Dzbagatspanyan, R. V.; Zetkin, V. I.; Pospelov, V. Ye.; Fedchenko, V. S. 72

TITLE: Radiochemical sulfochlorination of polystyrene

SOURCE: Plasticheskiye massy<sup>4</sup>, no. 5, 1963, 4-7

TOPIC TAGS: sulfochlorination, polystyrene, chlorine, sulfur dioxide, cobalt sup 60, sulfuryl chloride

ABSTRACT: Improved properties were anticipated from the sulfochlorination of polystyrene, achieved by reacting 1% polystyrene emulsion with chlorine and sulfur dioxide (in molar ratios of 0.22:1 - 4.05:1) dissolved in carbon tetrachloride and subjected to Gamma-radiation from a Co sup 60 source. Over a range of 0 - 55C, the reaction rate increased with increasing temperature to a maximum at 40C. Increasing the total dose of radiation had little effect on the process, which was all but complete within 15-20 minutes. No clear relationship was found between the rate and outcome of the reaction and the molar ratio of the two gases: although the final sulfur content was more dependent than was the chlorine content on the initial ratio, in no case did the final product contain much more than 3% sulfur. Unlike the other polymers, polystyrene could not be sulfochlorinated with sulfuryl chloride. Sulfochlorinated polystyrene had better adhesive qualities (with glass and

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15

L 12964-63  
ACCESSION NR: APJ000593

metals) than polystyrene, a hardness of approximately 0.9 (pendulum apparatus), an impact strength of approximately 50 kg/sec x cm/cm sup 2, and an elasticity in bend of 1 on the NDK scale. Applied without admixture to iron plates, it withstood 6 hours' exposure to 150C. It was, however, less resistant than polystyrene to the action of acids, alkalis, and water. Orig. art. has: 1 figure, 1 formula, 3 tables.

ASSOCIATION: none

SUBMITTED: 00

DATE ACQ: 10Jun65

ENCL: 00

SUB CODE: MA

NO REF SOV: 005

OTHER: 000

Cord 2/2

YAKIMENKO, L.M.; KOKHANOV, G.N.; VESELOVSKAYA, I.Ye.; DZHAGATSPANYAN, R.V.

Investigating the electrochemical behavior of titanium and its alloys  
during the electrolysis of chloride solutions. Titan i ego splavy no.  
10:168-175 '63. (MIRA 17:1)

KOLBASOV, V.I.; BARDESHTEYN, S.B.; DZHAGATSPANYAN, R.V.

Quantitative analysis of impurities in chloroform from their  
infrared absorption spectra. Zav.lab. 29 no.8:938-940 '63.  
(MIRA 16:9)  
(Chloroform) (Organic compounds--Absorption spectra)  
(Chemistry, Analytical-- Quantitative)

VIRIN, L.I.; BUSHINSKAYA, L.M.; DZHAGATSPANYAN, R.V.

Analysis of methallyl chloride by gas-liquid chromatography.  
Zav.lab. 29 no.11:1301-1302 '63. (MIRA 16:12)



VESELOVSKAYA, I.Ye.; FLISSKIY, M.M.; DZHAGATSPANYAN, R.V.; MOROCHKO, L.V.

Study of the adsorption of sulfate ion on a graphite anode  
under conditions of chloride electrolysis. Zhur. prikl.  
khim. 36 no.10:2179-2183 0 '63. (MIRA 17:1)

REF ID: A66833

Wastspanyan, R. V.: 1951, . . .

...oxidation of polyethylene under the influence of ...

SOURCE: Plasticheskiye massy, no. 10, 1964, 5-8

sulfochlorination, polyethylene gamma radiation induced sulf-  
chlorination catalytic sulfochlorination of ethylene  
sulfolene

1. Sulfochlorinated polyethylene has many industrial uses, but its preparation is usually catalyzed reaction catalyzed by a catalyst. The reaction is initiated by a catalyst, and the present paper, the effect of the catalyst on the rate of the reaction is studied. A  $\text{CCl}_4$  solution of a high-pressure polyethylene with a molecular weight of about 20,000 was irradiated with  $\gamma$ -rays from a  $^{60}\text{Co}$  source. The effect of the dose and dose rate on the reaction was studied. The results of the experiment, the radiation dose, the dose rate, and the effect of the dose rate on the chlorinated polyethylene are discussed.

The initial purpose of the study was to determine the effect of the various factors on the rate of the reaction. The results of the study are shown in the following table. The data show that the rate of the reaction is affected by the concentration of the reactants, the temperature, and the presence of a catalyst. The rate of the reaction increases with increasing concentration of the reactants, with increasing temperature, and with the presence of a catalyst.

TABLE I  
Rate of Reaction  
as a function of  
Concentration of  
Reactants, Temperature,  
and Presence of Catalyst

N NR: AP4046893

RELATION: none

DATE: 00

ENCL: 00

DATE: 00

NO SELF SOV: 005

OTHER: 002

100-44365

Schubert, M.F.: Gesamtausgaben, 1970.

radiation chlorination of ethyltrichlorosilane, methyl- $\alpha$ -chlorosilane and dimethyldichlorosilane

...uznoye khimicheskoye shkol'noye ...  
...4, 475-486

radiation chlorination, reaction with chlorine	chloro-
radiation, liquid phase radiation chlorination	chlor-
silane, methyltrichlorosilane, chloromethyltrichlorosilane	chlor-
trichlorosilane, chloromethyltrichlorosilane	chlorination
trichloromethyltrichlorosilane	

The reaction mechanism of radiation-initiated chlorination of chlorosilanes was studied. Chlorination of chlorosilanes initiated chlorination of ethylchlorosilane with 0.01 molar chlorosilanes ranging from 0.15 to 0.15 molar. The chlorination of  $\alpha$  and  $\beta$  monochloro derivatives and the chlorination of  $\alpha$  and  $\beta$  monochloro derivatives was studied. The chlorination of  $\alpha$  and  $\beta$  monochloro derivatives was studied when reactant ratio was 0.15 to 0.15 molar. The chlorination of  $\alpha$  and  $\beta$  monochloro derivatives was studied when reactant ratio was 0.15 to 0.15 molar.

L 16666-65

NR. AP4044020

absorpt ratio = 0.15 or 0.18. Chlorination of methyltrichlorosilane  
 the solar ratios ranging from 0.15 to 0.18. Chlorination of methyltrichlorosilane  
 and a total concentration of 0.15 to 0.18. Chlorination of methyltrichlorosilane  
 proportional to the solar ratio. Chlorination of methyltrichlorosilane  
 0.15 rad/sec. had no effect on the rate of chlorination. Chlorination of methyltrichlorosilane  
 0.15 to 0.18 lowered overall rate of chlorination. Chlorination of methyltrichlorosilane  
 chlorosilane derivatives. Air chlorination of methyltrichlorosilane  
 mechanism is discussed for the chlorination of methyltrichlorosilane  
 chlorosilane wherein the rate of chlorination is determined by the rate of  
 reaction is determined by the rate of reaction. Chlorination of methyltrichlorosilane  
 0.15, and the rate of its chlorination is 0.15. Chlorination of methyltrichlorosilane  
 0.15  $\text{CH}_3\text{SiCl}_3 + \text{Cl} \rightarrow \text{CH}_3\text{SiCl}_2\text{Cl} + \text{HCl}$ . Chlorination of methyltrichlorosilane  
 about 10 times faster than for the chlorination of methyltrichlorosilane  
 0.15-0.18 increased this chlorination rate. Chlorination of methyltrichlorosilane  
 activation is about 7500 cal/mole. Chlorination of methyltrichlorosilane  
 to the chlorination of dimethylchlorosilane. Chlorination of methyltrichlorosilane  
 chlorosilane, the rate of the chlorination of methyltrichlorosilane  
 is 19 times faster than for the chlorination of methyltrichlorosilane  
 its energy of activation is 7500 cal/mole. Chlorination of methyltrichlorosilane  
 the ratio in radiation chlorination of methyltrichlorosilane

NR: AP4044020

initiated chlorination; the same rules apply to radical  
of photochemically and chemically initiated chlorina-  
tion initiation chlorination.

Note

NR: AP4044020

GC

NR REF SOV: 004

OTHER: 000

ACCESSION NR: AP4034544

S/0020/64/155/005/1163/1166

AUTHORS: Dzbagatspanyan, R.V.; Filippov, M.T.; Motsarev, G.V.; Zetkin, V.I.; Rozenberg, V.R.

TITLE: Radiative chlorination of certain organochlorosilanes and organopolysiloxanes

SOURCE: AN SSSR. Doklady\*, .v. 155, no. 5, 1964, 1163-1166

TOPIC TAGS: chlorination, irradiation chlorination, organochlorosilane, organopolysiloxane, chlorination mechanism, polydimethylsiloxane, polyphenylmethylsiloxane, ethyltrichlorosilane, methyltrichlorosilane, dimethyldichlorosilane, phenyltrichlorosilane, phenylmethyldichlorosilane, photochemical chlorination, substitution chlorination, addition chlorination, ionic mechanism, free radical mechanism

ABSTRACT: The mechanisms involved in the chlorination of various organosilane derivatives under the influence of  $\text{Co}^{60}$  radiation were investigated. A polydimethylsiloxane resin, molecular weight 400,000-500,000, was chlorinated at  $0^\circ\text{C}$  as a 4% solution in  $\text{CCl}_4$ . After

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ACCESSION NR: AP4034544

chlorination under 4200 rad/min. radiation the chlorine content was 50-55%; optimum reaction time was 15-30 minutes. Total radiation greater than  $1.25 \times 10^5$  rad did not lead to a higher chlorine content, but promoted degradation of the polymer. By chlorinating polyphenylmethylsiloxane under the same conditions, products containing up to 56.1% chlorine were obtained. About 80% of the chlorine reacted with the aromatic nucleus and 20% replaced hydrogens on a methyl group. Chlorination of ethyltrichlorosilane (molar ratio  $\text{Cl}_2$ :  $\text{C}_2\text{H}_5\text{SiCl}_2=3:7$ ) at OC using 900 rad/min gave  $\alpha$ - and  $\beta$ -monochloroderivatives in a ratio of 1:1.7, corresponding to results obtained by photochemical chlorination. On chlorinating methyltrichlorosilane and dimethyldichlorosilane the amount of monochloro derivatives in the reaction mixture did not depend on the molar ratio of reagents and the change in the amount of dosage did not influence the products of chlorination. The relative reaction rate of methyltrichlorosilane did not depend on the concentration of chlorine and at OC and 3300 rad/min equaled  $0.148 \pm 0.030$  moles/liter-min. The magnitude is proportional to the square root of the power of dosage. The energy

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ACCESSION NR: AP4034544

of activation is about 7300-6100 cal/mole for the reaction. Phenyltrichlorosilane and phenylmethyldichlorosilane were chlorinated at 0-150C at 5900 and 800 rad/min at 0-20C. The chlorine added to the double bond of the aromatic nucleus giving  $C_6H_5Cl_6SiCl_3$  and  $C_6H_5Cl_6(CH_3)SiCl_2$ . This additive chlorination under radiation is analogous to photochemical chlorination. At 50C, addition chlorination products as well as products of substitution chlorination in the methyl group and the aromatic nucleus were formed. At 100-150C substitution chlorination of the aromatic nucleus predominated indicating ionic mechanism for the arylalkylchlorosilanes. A free radical mechanism was postulated for the alkylchlorosilanes. Orig. art. has: 11 equations and 1 table

ASSOCIATION: None

SUBMITTED: 16Nov63

ENCL: 00

SUB CODE: 00

NR REF SOV: 005

OTHER: 002

Card 3/3

MOTSAREV, G.V.; YAKUBOVICH, A.Ya.; ROZENBERG, V.R.; FILIPPOV, M.T.;  
DZHAGATSPANYAN, R.V.; BARDENSHEYN, S.B.; KOLBASOV, V.I.;  
ZETKIN, V.I.

Halogenation of aromatic silanes. Part 17: Addition of chlorine  
to phenyl-trichlorosilane. Preparation of hexachlorocyclohexyl-  
trichlorosilane and the mechanism of its formation. Zhur. ob.  
khim. 35 no.7:1178-1183 J1 '65. (MIRA 18:8)

L 27304-66 EWT(m)/EPF(n)-2/ENP(j)/I/ENA(h)/ENA(l) IJP(z) GG/RM

ACC NR: AP6008980

(A)

SOURCE CODE: UR/0190/65/007/011/1959/1963

AUTHORS: Dzhagatspanyan, R. V.; Kolbasov, V. I.; Bardenshteyn, S. B.; Kerolev, B. M.; Romanskiy, I. A.; Zetkin, V. I.

ORG: none

TITLE: The structure of radiation chlorinated and sulfochlorinated polyethylene

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 11, 1965, 1959-1963

TOPIC TAGS: polymer, polyethylene, chlorination, aliphatic compound, chlorine

ABSTRACT: The structure of radiation chlorinated and sulfochlorinated polyethylene in the solid state and in solution was studied by IR spectroscopy. The polyethylene specimens were prepared after the method of R. V. Dzhagatspanyan, L. M. Yakimenko, A. I. Gershenovich, and V. I. Zetkin (Avt. svid. No. 150625, 1961; Byull. izobreteniy, 1963, No. 20, 93). The IR spectra of the investigated compounds are presented. It was found that the IR spectra of bulk radiation sulfochlorinated polyethylene were identical to those sulfochlorinated in bulk by chlorine. It is concluded that chlorination of the polymer occurs more readily in the amorphous phase than in the crystalline phase. Orig. art. has: 2 graphs.

SUB CODE: 11/ SUBM DATE: 26Dec64/ ORIG REF: 003/ OTH REF: 005

Card 1/1

UDC: 678.01:53+678.743

DZBAGASIMYAN, B.V.; YAFRENEO, L.M.; SINITSYN, V.I.; LYASHIN, Ya.O.;  
SINITSYN, V.I.; LIEMAN, B.Ya.

Radiochemical sulfochlorination of kerosene and pythine. Khim. prom.  
41 no.4:7-11 Ap '65. (MIRA 18:8)

KHROMENKOV, L.G.; DZHAGATSPANYAN, R.V.; SOKOLOV, V.A.; KOROLEV, B.M.;  
ZETKIN, V.I.

Structure formation in radiation sulfochlorinated polyethylene  
and its solutions. Vysokom.sped, 7 no.10:1776-1778 O '65.  
(MIRA 18:11)

ZETKIN, V.I.; PANCHENKOV, G.M.; ZAKHAROV, Ye.V.; KOLESNIKOV, I.M.;  
DZHAGATSPANYAN, R.V.

Chlorination and sulfochlorination of organic compounds in  
apparatus with periodical and continuous action. Khim. prom.  
41 no.10:733-734 O '65. (MIRA 18:11)

DZHAGATSPANYAN, R.V.; KOLBASOV, V.I.; BARDENSHTEYN, S.B.; KOROLEV, B.M.;  
ROMANSKIY, I.A.; ZETKIN, V.I.

Structure of radiation chlorinated and sulfochlorinated polyethylene.  
Vysokom. soed. 7 no.11:1959-1963 N '65. (MIRA 19:1)

1. Submitted December 26, 1964.



VIRIN, L.I.; SAFIN, Yu.A.; TREGER, Yu.A.; DZHAGATSPANIAN, R.V.

Mass spectra and structure of some allyl derivatives. Zhur.fiz.  
khim. 39 no.11:2824-2826 N '65.

(MIRA 18:12)

ZETKIN, V.I.; DZHAGATSPANYAN, R.V.; ZAKHAROV, Ye.V.

Chlorination of nitrobenzene. Zhur. prikl. khim. 38 no. 10:  
2379-2383 0 '65. (MIRA 18:12)

1. Submitted July 19, 1963.

L 08699-67 E.M.T(m) WE  
ACC NR: AP6015121

(A)

SOURCE CODE: UR/O

3/005/0018/0020

AUTHOR: Dzbagatspanyan, R. V.; Lyaskin, Yu. G.; Filippov, M. Sinitain, V. I.;  
Yakimenko, L. M.; Globova, L. I.; Zetkin, V. I.

58

ORG: none

TITLE: Radiation chlorination of kerosene<sup>112</sup>

SOURCE: Khimicheskaya promyshlennost', no. 5, 1966, 18-20

TOPIC TAGS: kerosene, gamma radiation, chlorination, photochemistry

ABSTRACT: Groznyy kerosene, from which the aromatic and unsaturated compounds were eliminated by extraction with liquid SO<sub>2</sub> was used during chlorination initiated by gamma-radiation of Co<sup>60</sup> made in the apparatus described by the authors previously (Khim. prom. no. 4, 247, 1965). After purification the kerosene had a molecular weight of 177. Chlorine was passed at the rate of 0.469 g/min in the reactor set into a thermostat with a controlled given temperature. The radiation source was introduced after 15 minutes. The chlorination products were purified from Cl<sub>2</sub> and HCl by passing a flow of nitrogen. The densities and refractive indexes were measured and the degree of chlorination was determined from the graphs, plotted experimentally, showing the dependence of density  $d_{20}^{20}$  and the refractory indexes  $n_D^{20}$  of the chlorinated products on their chlorine content. Kinetic curves (content of chlorine vs time in min) were

Card 1/2

UDC: 665.634-4 : 66.094.403.085.3

L 08659-67

ACC NR: AP6015121

plotted at various temperatures of chlorination ( $T = 20, 40, \text{ and } 60^\circ\text{C}$ ) and at various doses of radiation ( $P = 26.1, 7.3, 1.8, \text{ and } 0.61 \text{ rad/sec}$ ). The dependence of the radiation-chemical efficiency coefficient  $G$  (number of atoms bound with carbon per 100 equivalent) on the radiation dose  $P$  was plotted from kinetic curves. The expression  $G = 1.22 \cdot 10^3 \cdot \left( \frac{1000}{P} + 6.76 \cdot 10^{-2} [\% \text{Cl}] \right)^{p-0.47}$  well describes the results obtained. (Dis-agreement of experimental and calculated values averaged  $\pm 10.8\%$ .) This equation can be used for designing a reactor for a temperature range of  $0-100^\circ\text{C}$ , a radiation dose of  $1-50 \text{ rad/sec}$ , and a chlorine content of  $5-60\%$ . The apparent energy of activation was determined as  $3200 \text{ cal/mole}$ . The results of radiation chlorination were compared with those of photochemical chlorination and chlorination initiated by azo-bis-isobutyronitril. It was shown that the same degree of chlorination was achieved more rapidly during radiation chlorination. At  $T = 20^\circ\text{C}$  and  $P = 26 \text{ rad/sec}$ , the product containing  $\text{Cl} > 60\%$  was obtained in 90 minutes during radiation chlorination. It took 23 and 21 hours to obtain the same product by photochemical chlorination and chlorination initiated by azo-bis-isobutyronitril, respectively. Radiation chlorination also has other advantages: it depends little on temperature and is controlled by the radiation dose (easily controllable rate of chlorination), the rate of the radiation process does not depend on the color of the reacting mixture, and there is a much smaller danger of resinification because of an absence of local overheating. Orig. art. has: 3 fig., 4 formulas, and 1 table.

SUB CODE: 07/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001

Card 2/2

L 18417-66 EWT(m)/EWP(j)/T/EWA(h)/EWA(l) RM

ACC NR: AP6003424

SOURCE CODE: UR/0190/66/008/001/0125/0130

AUTHORS: Dzhagatspanyan, R. V.; Bardenshteyn, S. B.; Kolbasov, V. I.; Korolev, B. M.

ORG: none

TITLE: Study of the structure of radiation chlorinated and sulfochlorinated polypropylene 58  
19 B

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 1, 1966, 125-130

TOPIC TAGS: polymer, polypropylene plastic, polymerization kinetics, IR spectroscopy, spectroscopy, chlorination, organic compound

ABSTRACT: The structure of sulfochlorinated polypropylene, sulfochlorinated by means of radiation in the solid phase, was investigated by IR spectroscopy to extend the work of R. V. Dzhagatspanyan, L. M. Yakimenko, V. I. Zetkin, A. I. Gershenovich, and V. S. Pospelov (Avt. svid. 149773, 1961 g.; RZhKhim, 1963 9T50). A comparison of IR spectra of a specimen chlorinated in solution and in the solid phase is presented. The experimental results are presented graphically (see Fig. 1). It was found that the crystallinity of polypropylene decreases

Card 1/2

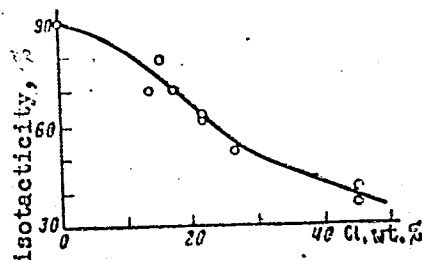
UDC: 678.01:53+678.745 2

L 18417-66

ACC NR: AP6003424

0

Fig. 1. Dependence of optical density, measured at the maximum absorption for the band  $973\text{ cm}^{-1}$  (measure of isotacticity), on the chlorine content, %.



with increase in the degree of sulfochlorination. The crystallinity of specimens sulfochlorinated in the solid phase is 3.5 times smaller than that of pure polypropylene, and the specimens chlorinated in solution are amorphous. It is concluded that for both types of specimens, i.e., chlorinated in solution and in solid phase, displacement of hydrogen by chlorine takes place more rapidly for  $\text{CH}_2$  groups than for  $\text{CH}_3$  group hydrogens. Orig. art. has: 8 graphs.

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Card 2/2 *ps*

L 24493-66 EMT(m)/EPF(n)-2/EWP(j)/EWA(h)/EWA(l) IJP(c) GG/RM  
 ACC NR: AP6006971 (A) SOURCE CODE: UR/0190/66/008/002/0193/0197

AUTHORS: Dzhagatspanyan, R. V.; Sokolov, V. A.; Khromenkov, L. G.; Korolev, B. M.

ORG: none

TITLE: On x-ray determination of crystallinity in polyethylene, chlorinated and sulfochlorinated by radiation

SOURCE: <sup>19</sup>Vysokomolekulyarnyye soyedineniya, v. 8, no. 2, 1966, 193-197

TOPIC TAGS: polyvinyl chloride, chlorination, polyethylene plastic, x ray analysis, radiation polymerization

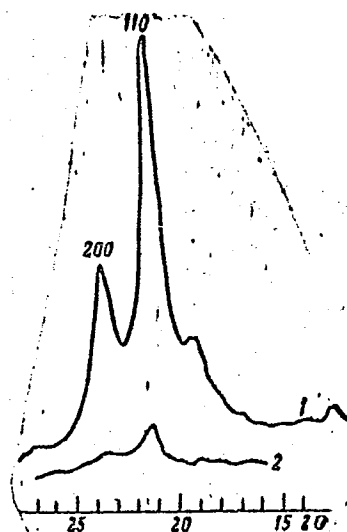
ABSTRACT: The degree of crystallinity of polyethylene (I) samples chlorinated and sulfochlorinated in solid phase by penetrating radiation from a Co<sup>60</sup> source was investigated. The method, involving x-ray study, consists of determining the ratio of the intensities of chlorinated and nonchlorinated samples. This ratio, in turn, gives the ratio of crystalline phases in the samples because only I is in the crystalline phase during the solid phase chlorination. The noninterfering chlorinated products are considered as the amorphous phase. Spectra of chlorinated and nonchlorinated I are shown in Fig. 1. The decrease in peak intensity is a measure

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UDC: 678.01:53+678.743+678.745

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Fig. 1. Spectra of untreated (1) and chlorinated (2) polyethylene.



of the decrease of crystalline phase and of the increase of x-ray absorption coefficient in the chlorinated sample. Measurements of the densities of chlorinated samples indicate that each sample consists of a mixture of I and of the final

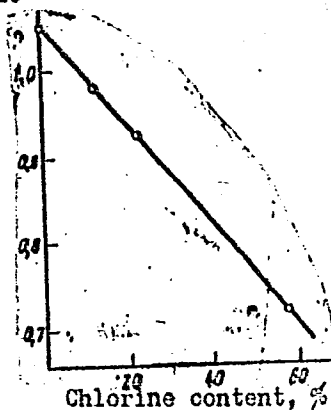
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chlorination product, polyvinyl chloride.<sup>b</sup> The relationship between the density and chlorine content is illustrated in Fig. 2.

Fig. 2. Specific volume of chlorinated samples as a function of chlorine content.



Sulfochlorination in the solid phase has a similar effect. Chlorination of I in a  $CCl_4$  suspension leads to retention of crystallinity to a greater degree. Orig. art. has: 1 table, 4 figures, and 3 equations.

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Card 3/3 *LC*

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